

### **REMARKS**

Favorable reconsideration and allowance of the present application are respectfully requested in view of the following remarks. Claims 41-74 are currently pending, including independent claims 41, 57, 63, and 71. Claims 1-40 and 75-76 were previously cancelled.

Independent claim 41, for instance, is directed to a method for joining substrates comprising providing a first substrate and second substrate, each having an upper surface and a lower surface. A continuous thermoplastic tape is positioned adjacent to the first substrate and the second substrate such that the tape is in operative communication with the upper and lower surfaces of the first substrate and with the upper and lower surfaces of the second substrate. This continuous thermoplastic tape is capable of forming both an adhesive bond and a physical bond with the substrates. A seam is formed by bonding the continuous thermoplastic tape to the upper and lower surfaces of the first substrate and to the upper and lower surfaces of the second substrate, and this bonding between the tape and the substrates includes both "physical bonding" and "adhesive bonding."

"Adhesive bonding" is defined in Applicants' specification as bonding that results from attractive forces between two or more materials (i.e., dipole-dipole forces, a type of van der Waals force, which occur upon the interaction of the dipole moments of two polar molecules). (Appl. p. 2, line 29 – p. 3, line 5; p. 10, lines 19-23). And such "adhesive bonding" is separate and distinct from "physical bonding," which is defined by Applicants as, for example, the physical intermingling of portions of the thermoplastic tape within the interstices of a substrate as a result of portions of the tape becoming relatively melt-flowable upon heating. (Appl. p. 3, lines 5-7; p. 10, line 24 – p. 11, line 8).

The Final Office Action repeated all of the claim rejections set forth in a previous Office Action mailed on December 16, 2003. Specifically, independent claims 41, 57, 63, and 71 (along with several of the dependent claims) were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,970,079 to Gaylord, Jr., which is

directed to a body support binder formed from serially arranged fabric panels whose ends are interconnected by strips of plastic material.

Applicants' claims require, among other things, (1) that the continuous thermoplastic tape is capable of forming both an adhesive bond and a physical bond with the substrates and (2) that the bonding (that results in formation of the seam) between the tape and the substrates includes both "physical bonding" and "adhesive bonding." The Final Office Action states that Gaylord, Jr. discloses "the presence of both adhesive bonding and physical bonding in a seam that joins two substrate[s] using a continuous thermoplastic tape," citing column 4, lines 39-41. (Final Office Action, p. 3). More specifically, the Final Office Action states the following:

Gaylord, Jr. teaches that the segments are heated and pressed together to fuse the plastic layers together and thereby join the fabric panels (col. 4 lines 21-24). Therefore, the bonding of the plastic layers resulted from attractive forces as defined in adhesive bonding since the two plastic layers are adhered to each other.

(Final Office Action, p. 3).

However, Applicants respectfully submit that Gaylord, Jr. does not teach a combination of "physical bonding" and "adhesive bonding" between a thermoplastic tape and first and second substrates. The portion of Gaylord, Jr. cited in the Office Action refers only to what happens between "segments" of Gaylord, Jr.'s thin plastic film when those segments are heated and pressed together. In other words, rather than pointing to any disclosure from Gaylord, Jr. that describes forming a seam by bonding a continuous thermoplastic tape to the upper and lower surfaces of first and second substrates, wherein the bonding *between the tape and the substrates* includes physical bonding *and* adhesive bonding, the Office Action points only to the joining of segments of plastic material *to each other* (i.e., the joining of the two segments of plastic material 60, 60 shown in Figure 9 of Gaylord, Jr. to form the final joining strip 64 shown in Figure 10 and/or the joining of the two segments of plastic material 65, 65 shown in Figure 11 to form the plastic strip 66 shown in Figure 12).

Applicants submit, then, that Gaylord, Jr. fails to teach a method for joining substrates or an article in which a seam is formed by a continuous thermoplastic tape

bonded to the upper and lower surfaces of first and second substrates, wherein (1) the tape is capable of forming both an adhesive bond and a physical bond with the substrates and (2) the bonding between the tape and the upper and lower surfaces of the first and second substrates includes both physical bonding and adhesive bonding.

As previously described, using a continuous thermoplastic tape that is capable of forming *both* physical bonds *and* adhesive bonds with the substrates it joins allows for processing temperatures and pressures to be varied to favor one type of bonding over the other. (Appl. p. 11, line 26 – p. 12, line 8). Similarly, using a continuous thermoplastic tape that is capable of forming *both* physical bonds *and* adhesive bonds with the substrates it joins allows for the construction of the tape to be varied in order to control the extent of adhesive bonding and physical bonding present in the seam. For instance, using a multi-layer or multi-component tape comprising multiple thermoplastic materials would allow formation of a seam where certain portions of the tape bond to a substrate primarily through adhesive bonding, while other portions of the tape bond to a substrate primarily through physical bonding.

Additionally, using a continuous thermoplastic tape capable of forming *both* adhesive *and* physical bonds with a substrate is useful in embodiments where the materials that form the first substrate are different from the materials that form the second substrate. In such situations, one substrate may be less “adhesively compatible” with the thermoplastic tape, while the other substrate may be less “physically compatible” with the tape because of differences in thermal melting points. Yet, in these situations, because the continuous thermoplastic tape of Applicants’ claimed invention is capable of both adhesive and physical bonding, the tape can form bonds having excellent strength with *both* the substrates. (Appl. p. 12, line 24 – p. 13, line 26).

In contrast to Applicants’ claimed invention, however, Gaylord, Jr. does not teach or in any way suggest that the strips of plastic material it uses to join the serially arranged panels of its thoracic support binder are capable of *both adhesively and physically bonding* to those serially arranged panels. Similarly, when the fabric panels of Gaylord, Jr.’s thoracic support binder are joined, there is no teaching or suggestion

that the panels are joined by a seam formed by bonding a continuous thermoplastic tape to the upper and lower surfaces of two substrates, *where that bonding includes a combination of both adhesive bonding and physical bonding*, as Applicants have defined the terms “adhesive bonding” and “physical bonding.” Accordingly, for at least the reasons set forth above, Applicants respectfully submit that independent claims 41, 57, 63, and 71 patentably define over Gaylord, Jr.

Various dependent claims were rejected under either 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) as being unpatentable over Gaylord, Jr. alone, or in view of U.S. Patent No. 4,410,575 to Obayashi, et al., the “eFunda” reference, the “Encyclopedia of Petroleum Products” reference, the “Lumicor” reference, U.S. Patent No. 5,003,902 to Benstock, et al., U.S. Patent No. 5,591,521 to Arakawa, et al., and/or U.S. Patent No. 6,096,420 to Wilhoit, et al. Applicants respectfully submit that at least for the reasons indicated above relating to corresponding independent claims 41, 57, 63, and 71, the dependent claims patentably define over the cited references. However, the patentability of the dependent claims does not necessarily hinge on the patentability of independent claims 41, 57, 63, and 71; as some or all of the dependent claims may possess features that are independently patentable, regardless of the patentability of claims 41, 57, 63, and 71.

For instance, Applicants respectfully submit that dependent claims 48-49, 59-60, 68-69, and 73-74 patentably define over the combination of Gaylord, Jr., Obayashi, et al., the “eFunda” reference, the “Encyclopedia of Petroleum Products” reference, and the “Lumicor” reference. Particularly, the Office Action has not shown any suggestion or motivation in the prior art for combining the teachings of these five references and arriving at claims 48-49, 59-60, 68-69, and 73-74, which recite that at least a portion of the thermoplastic tape contains multiple layers and that these multiple layers can include different thermoplastic materials having different thermal melting temperatures. Rather, the only incentive or motivation for combining these five references in the manner suggested in the Final Office Action appears to stem from the use of Applicants’ disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art, which is improper under 35 U.S.C. § 103.

In summary, Applicants respectfully submit that the present claims patentably define over all of the prior art of record for at least the reasons set forth above. As such, it is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner Rhee is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Response.

Please charge any additional fees required by this Response to Deposit Account No. 04-1403.

Respectfully requested,

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